

Remarks

Claims 1-23 were pending in this application prior to this response. Claim 14 was allowed and claims 16 and 17 were objected to. The remaining claims were rejected. Claims 1-6, 15, and 18-23 have been cancelled herein. The applicants request reconsideration of all remaining rejected claims.

I. Objection to Claims 17 and 19-22

Claims 17 and 19-22 were objected to because of improper dependency. Claim 17 has been amended herein to overcome the improper dependency and claims 19-22 have been cancelled. Therefore, the objection has been overcome.

II. Objection to Claims 8-10, 16, and 19-22

Claims 8, 19, and 22 were objected to because they recite a limitation of "frequency of the artificial illumination" which lacks antecedent basis.

Claim 16 was objected to because of a lack of matching plurality in the term "at least two exposure."

Claims 9, 10, 21, and 22 were objected to because of antecedent basis problems with the term "periodic changes."

Claims 8-10 and 16, as amended herein, overcome the above described objections. Claims 19-22 have been cancelled. Therefore, the objections have been overcome.

III. Rejection of Claims 1-12 and 18-23 Under 35 U.S.C. §103(a)

Claims 1-12 and 18-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hashimoto (6,130,417) in view of Munson (U.S. 6,295,085). The applicants note that claims 1-6 and 18-23 have been cancelled herein.

CLAIM 7

Claim 7 is independent and is restated as follows:

A method for auto-focus control in a digital camera, the digital camera comprising a movable lens, the method comprising:

determining a presence of artificial illumination in the scene;

determining a frequency of illumination intensity variations in the scene;

taking a first exposure with the [[a]] lens in a first position, the first exposure occurring at a preselected phase of ~~synchronized~~ with the frequency of illumination intensity variations in the scene;

moving the lens to a second position;

taking a second exposure at the ~~synchronized~~ preselected phase of the frequency of illumination intensity variations; and

determining which lens position has a better focus measure.

According to the office action, Hashimoto discloses exposures being synchronized with the frequency of intensity variations in the scene. The office action cites Column 8, lines 59-65 of Hashimoto which was restated above. Claim 7 has been amended herein in order to better describe that the taking of the exposures commences at a preselected phase of the frequency of illumination. Thus, each exposure commences with the intensity of the artificial illumination the same for each exposure. As stated above, Hashimoto is directed toward using an exposure time that is a period or multiple of periods of the illumination intensity variations, which is not claimed in claim 7.

Based on the foregoing, Hashimoto does not describe all the elements of claim 7 and, therefore, cannot render claim 7 obvious. The applicants request reconsideration of the rejection.

CLAIMS 8-12

Claims 8-12 are dependent on claim 7 and are deemed allowable by way of their dependence and for other reasons. Therefore, the applicants request reconsideration of the rejections.

IV. Rejection of Claim 13 Under 35 U.S.C. §103(a)

Claim 13 was rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki (U.S. 5,701,526) in view of Inuiya (U.S. 5,905,529), further in view of Smith (U.S. 6,501,518), further in view of Hashimoto (6,130,417).

Claim 13 is independent and is restated as follows:

A method for auto-focus control in a digital camera, the digital camera comprising a lens, the method comprising:

predicting at least one frequency, wherein the at least one frequency represents a variation in the illumination of a scene;

measuring light from the scene at a periodic rate, wherein the periodic rate is different than any of the predicted frequencies or any multiple of the predicted frequencies, using an exposure length that is different than any of the periods of the predicted frequencies during the measuring;

determining that an artificial illuminant is illuminating the scene when the measured light from the scene changes periodically;

determining the frequency of the periodic changes using fast Fourier transform analysis of the measured light;

synchronizing an exposure rate with the frequency of the intensity variations in the scene;

taking a first synchronized exposure with a lens in a first position, the first synchronized exposure occurring at a preselected phase in the frequency of the periodic changes;

moving the lens to a second position;
taking a second exposure at the preselected phase in the frequency
of the periodic changes; and
determining which lens position has a better focus measure.

The applicants note that the rejection of claim 13 is based on the combination of four references. The applicants contend that the motivation to combine four references does not exist.

According to the office action, Hashimoto teaches taking exposures with the lens at different positions. In addition, the office action states that Hashimoto teaches that the exposure rates are synchronized with the frequency of intensity variations in the scene.

Hashimoto teaches taking an exposure with a **shutter speed synchronized to a period of half the frequency of an AC power source**. See Hashimoto column 8, lines 59-65. Thus, Hashimoto teaches that the exposure occurs during a period or multiple of periods of the flicker or variation in the scene. There is nothing in Hashimoto related to taking exposures at preselected phases in scene changes as claimed in claim 13. Thus, the combination of references cited in the office action do not disclose all the elements of claim 13 and cannot render claim 13 obvious.

Based on the foregoing, the applicants contend that the rejection of claim 13 has been overcome.

In view of the above, all of the pending claims are now believed to be in condition for allowance and a notice to that effect is earnestly solicited.

Respectfully submitted,
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